IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Armin KUEBELBECK — Examiner: Pegah Parvini

Serial No.: 10/592,017 — Group Art Unit: 1793

Filed: September 7, 2006

Title: PROCESS FOR THE PRODUCTION ON MONODISPERSE SiO_2 PARTICLES

REPLY BRIEF UNDER 37 C.F.R. §41.41

MAIL STOP: APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Examiner's Answer issued January 22, 2010, attached herewith is Appellants' Reply Brief, pursuant to 37 CFR §41.41.

1. Submission of Translation of Teller et al. (EP 1 036 763)

Teller et al. (EP 1 036 763) was first applied in a rejection of appellants' claims in the Final Office Action of March 17, 2009. In the Reply filed September 17, 2009 and the Appeal Brief filed November 17, 2009, appellants pointed out that the Teller et al. document was in German and no English translation was provided. As a result, appellants' counsel could not comment on the Examiner's assertions regarding specific disclosures within the Teller et al. document. For the first time, an English translation of the Teller et al. document was entered into the record as an attachment to the Examiner's Answer.

To have finally submitted an English translation of Teller et al. with the Examiner's Answer is at the very least extremely untimely. Appellants submit that the more appropriate

procedure would have been to issue a new Office Action withdrawing the finality of the Final Office Action of March 17, 2009.

2. Teller et al. and Blizzard et al. do not disclose non-porous particles

At page 4 of the Examiner's Answer, it is argued that since the Teller et al. "reference does not disclose the production of porous particles; therefore, it is seen to read on the instant limitation absent evidence to the contrary." Similar arguments are made in the Examiner's Answer with regards to the primary reference Trau et al. See page 9 of the Examiner's Answer. Appellants disagree with the assertion that, merely because Teller et al. and Trau et al. do not expressly disclose that their particles are porous, one can definitively conclude that the particles produced by Teller et al. or Trau et al. are non-porous.

When a reference is silent on a feature of the claimed invention, the appellants are not under a duty to present evidence that the reference does not disclose the feature. The burden is on the USPTO to establish obviousness.

At page 20 of the Examiner's Answer, the Examiner argues that the process of Teller et al. is allegedly a very similar process to that of the appellants. Further, it is asserted that one of ordinary skill in the art would expect to obtain nonporous silica particles "motivated by the fact the neither Teller et al. nor the combination of Teller et al. in view of Blizzard et al. make any indication to the production of porous silica."

Appellants' process clearly differs from that of Teller et al. and Trau et al. For example, Teller et al. and Trau et al. use ammonia in the condensation reaction, whereas appellants use ethanolamine. Further, it is not surprising that the reference Blizzard et al. does not disclose non-porous particles since the reference, which utilizes ethanolamine, is directed to making silicone resin, not polysilicic acid particles. There is no motivation to expect non-porous particles based on the absent of a disclosure porous particles. One might just as easily allege that, if there were any expectation presented by the asserted combination of Teller et al. or Trau et al. with Blizzard et al., , it would be that the resultant process would produce resin (like Blizzard et al.), not non-porous particles.

3. Example 1 of Blizzard et al.

As pointed out in the Appeal Brief, the disclosure of Blizzard et al. is directed to the

formation of a radiation curable silicone resin from an amine alcohol, a tetralkoxysilane, and a multifunctional acrylate. The disclosure of Blizzard et al. is not directed to formation of mono-dispersed polysilicic acid particles, and therefore provides no indication as to how or why one would modify a process for production of mono-dispersed polysilicic acid particles.

In the Examiner's Answer, at pages 5 and 17, it is argued that the Example at column 7, line 60 – column 8, line 14 of Blizzard et al. "is pertinent to the art of Teller et al." Specifically, it is argued that this Example of Blizzard et al. refers to hydrolysis and condensation of tetraethoxysilane in the presence of ethanolamine (characterized as a base) and pentaerythritol tetraacrylate (characterized as a ketone and a solubilizer) and that this process is very similar to processes of the primary references of Teller et al., Trau et al., and Unger et al.

However, Blizzard et al. do not employ pentaerythritol tetra-acrylate as a solubilizer, and one of ordinary skill in the art upon reading the disclosure of Blizzard et al. would not assume that this compound functions as a solubilizer. In the reaction medium of Blizzard et al., it is evident that the pentaerythritol tetra-acrylate acts as the multifunctional acrylate, i.e., a component that reacts with tetraethoxysilane. It is not used as a solubilizer. One of ordinary skill in the art upon reading Example 1 of Blizzard et al. could not come to any conclusion about the function of pentaerythritol tetra-acrylate other than that pentaerythritol tetra-acrylate was used a reactant.

The function of pentaerythritol tetra-acrylate is explicitly clear from the disclosure of Blizzard et al. In addition to forming a Michael adduct with the amine alcohol, the pentaerythritol tetra-acrylate, acting as part of the Michael adduct, undergoes copolymerization with the tetra-alkoxysilane hydrolyzate, thereby resulting in the formation of the silicone resin, **not mono-dispersed polysilicic acid particles.** See, e.g., column 6, lines 54-62 of Blizzard et al.

At page 6 of the Examiner's Answer, it is argued that in Example 1 of Blizzard et al. the weight percentages used are 11% TEOS, 0.87% ethanolamine, 82% pentaerythritol tetra-acrylate, and 4.89 % water. However, these values are not relevant to appellants' claims 20 and 27-28, since both the ethanolamine and pentaerythritol tetra-acrylate are used in the Blizzard et al. to provide functions that are not relevant to the functions associated with the use of ammonia and ethanol in the process of Teller et al., Trau et al., or Unger et al.

At page 18 of the Examiner's Answer, it is argued that appellants claim pentaerythritol tetra-acrylate as a solubilizer. Appellants' claims recite the use of a solubilizer. Thus, these agents are defined functionally. The materials which make up this class must provide the function of a solubilizer. Thus, the ketones recited in claim 7 must be ketones that function as a solubilizer. Appellants' claims' do not recite pentaerythritol tetra-acrylate, and do not identify pentaerythritol tetra-acrylate as a solubilizer.

4. No disclosure of equivalence between ammonia and ethanolamine

In the Examiner' Answer at pages 5, 9, 14, and 18-20, the Examiner argues that the primary references and Blizzard et al. disclose that ammonia and ethanolamine are functional equivalents. As appellants previously pointed out in the Appeal Brief, in the Blizzard et al. disclosure the amount of the amine alcohol used is tied to the amount of multifunctional acrylate used, because the function of the function of the amine alcohol is to form a Michael adduct with the acrylate/methacrylate groups. See column 6, lines 13-28, column 6, lines 37-41, and column 7, lines 5-20.

Since the reaction mediums of Teller et al., Trau et al., and Unger et al. do not contain a multifunctional acrylate, Blizzard et al. provide no suggestion of modifying their processes so as to replace ammonia with an amine alcohol such as ethanolamine. Rather than disclosing that ethanolamine has the same function as ammonia, Blizzard et al. disclose that ethanolamine has a function which is not present in the processes of Teller et al., Trau et al., and Unger et al. The assertion that Example 1 of Blizzard et al involves hydrolysis and condensation does not obviate the fact that the ethanolamine is used to provide a function that is completely irrelevant to the processes of Teller et al., Trau et al., and Unger et al.

At page 19 of the Examiner's Answer, the Examiner asserts that appellants have provided no evidence that ethanolamine can be used for hydrolysis and condensation. Of course, to present such evidence would require appellants to present evidence that their process is inoperative, which it is not. But, the question is not whether ethanolamine can be used in a process involving hydrolysis and condensation. The question is whether the cited prior art references discloses that ammonia and ethanolamine are functional equivalents, which they do not.

The Examiner argues at pages 18-19 that the use of ethanolamine in the process of Blizzard et al. and the use of ammonia in Teller et al. do not impart different effects. Appellants can only again disagree based on the express disclosure of Blizzard et al. As noted above, ethanolamine provides a function in the process of Blizzard et al. (to form a Michael adduct with the acrylate/methacrylate groups) that has nothing to do with the process of Teller et al., and the product of the Blizzard et al. process is a silicone resin, not mono-dispersed polysilicic acid particles. The use of ethanolamine in the Blizzard et al. process unquestionably imparts different effects, in terms of both reaction procedure and final product, than the use of ammonia in the process of Teller et al.

Also at page 6 of the Examiner's Answer, it is asserted that "Blizzard et al. is reasonable pertinent to the particular problem with which the applicants were concerned." It is noted that the Examiner's Answer does not state what is considered to be the particular problem with which the appellants are concerned. In any event, since Blizzard et al. is directed to making silicone resin and not mono-dispersed polysilicic acid particles, the Blizzard et al. is clearly **not reasonably pertinent** to the particular problem with which the appellants are concerned.

5. Amounts disclosed by Teller et al.

At pages 5 and 10 of the Examiner's Answer, it is argued that in Example 1 Teller et al. use 76.6 ml of ethanol, 13.6 ml of 25% ammonia, 20 ml of water, and 11.2 ml of TEOS. These amounts are also used in Examples 2-8. In examples 9-14, the amounts used are 181.5 ml of ethanol, 68 ml of 25% ammonia, 301.5 ml of water, and 56 ml of TEOS.

Based on the volume amounts used in Example, the Examiner argues that the weight percentages used were 64% ethanol, 2.4 % ammonia, 21% water, and 11% TEOS. It is noted that these percentages do not total 100. Additionally, the Examiner did not state what values were used for the densities in the calculation. If one uses the density values of 0.79 g/ml for ethanol, 0.9 g/ml for 25% ammonia, 1.0 g/ml for water, and 0.93 g/ml for TEOS, the weight amounts come out to 60.15 g ethanol, 12.24 g (3.06 g) 25% ammonia (3.06 g ammonia + 9.18 g water), 20 g of water, and 10.42 g l of TEOS. Based on these numbers the weight percentages would be: 58.6% ethanol, 3% ammonia, 28.3% water, and 10.1 % TEOS.

Regardless of which calculation is used, the amount of ethanol does not suggest the

70-90 % by weight solubilizers recited in appellants' claims 27-28.

Furthermore, the Examiner's comments fail to explain how 2.4 % ammonia (or 3% ammonia) suggest what amount of ethanolamine to be used in the asserted combination of Teller et al. and Blizzard et al., particularly since the ethanolamine in the Blizzard et al. process serves a function which is not relevant to the function served by ammonia in the Teller et al. process (or the Trau et al. process, or the Unger et al. process).

Conclusion

For the above reasons presented above and for the reasons presented in the Appeal Brief of November 17, 2009, it is urged that the decision of the Examiner finally rejecting claims 1, 2, and 6-28, on appeal, is in error and should be reversed.

Respectfully submitted,

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Filed: March 22, 2010